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Traille, F.G.S.E. Report on the Irrigation of Eastern Spain. Donor and Author, Clements R. Markham, F.S.A.

ACCESSIONS TO MAP-ROOM SINCE THE LAST MEETING.—One sheet of Topographical Survey of Sweden: Nyköpings Lan. Presented by Major-General J. A. Hazelius, Chief of the Royal Topographical Corps of Sweden. Natal: a Map of the Zulu and Adjacent Country. Presented by Capt. Walmsley, F.R.G.S. Map of the Republic of Paraguay and Provinces of Corrientes and Entre Rios. Presented by T. I. Hutchinson, F.R.G.S., British Consul at Rosario. 3 sheets of the Geological Map of Sweden. Presented by Professor A. Erdmann, Chief of Geological Survey of Sweden. France: Carte Hydrologique du Département de la Seine. Presented by M. Delesse, Professor of Geology and Engineer to School of Mines, Paris. Switzerland: 9 sheets of Dufour's Atlas, corrected up to 1866. Presented by the Federal Government.

The following Papers were read :—

1. *An Exploration of the River Aquiry, an Affluent of the Purus.* By W. CHANDLESS, Esq., M.A., Gold Medallist of the Royal Geographical Society.

THE Author began by recapitulating the chief points of interest in his narrative of the Exploration of the Purus in 1864-5, which was read last Session before the Society, whilst he was on his second journey (in 1865-6) up the river to examine its chief affluent the Aquiry. For the first fifty miles the Purus is a fine broad river, in parts broad and straight enough to give a fair water-horizon. Above this begin the numerous abrupt windings that add so much to its length. This unexpected tortuousness has thrown wrong most calculations about the Purus made from information obtained on the Amazons; thus Count de Castelnau estimates that the mouth of a certain affluent of the river must be at least as far south as 12° , that is more than 8 deg. of latitude from the Amazons; but it is really in latitude $7^{\circ} 48'$, or only 4 deg. south of the main river. There are very few settlers on the Purus; the one furthest from its mouth—about 250 miles—being an intelligent enterprising man who has begun to make a plantation of india-rubber trees, but he complained that the macaws bite off and drop down the unripe seeds of all the trees in the neighbourhood, so that it was difficult to get good seeds. The Indian tribes of the river are, in ascending, first, the Muras, who thinly people its banks for 250 or 300 miles; second, the Puru-purus, or Pammarys, essentially a water-side tribe, unwarlike and good-humoured; third, the Hypurinás, a grave

warrior-tribe, but whose wars are but village wars among themselves—they extend along the river for nearly 300 miles (not counting the local bends), the lower half have to some extent dealings with white men, but the rest are wild. After the Hypurinás there is a break of 100 miles or more where Indians are rarely seen, and beyond that a tribe is met with far more civilised than any below—the Manentenerys; they plant cotton, spin and weave it; when first met with they showed no fear, like other Indians, but met the traveller half-way; they seemed to have had some communication overland with the Catholic missionaries at Sarayacu on the Ucayali: they are fairly supplied with iron implements, which they seem to obtain from the Peruvians of the Ucayali, not directly, but through the medium of other Indians. Mr. Chandless heard of a portage here from the Purus to the Ucayali, over which a canoe could be dragged in two days, and, when embarked on the Ucayali, arrive at Sarayacu in ten days; but he was unable to verify the fact. The Manentenerys were industrious and well-clad, and their women seemed to be well-clad. Beyond the Manentenerys came the Canamarys, which had never before been reached by travellers from the Amazons. They were honest and well-mannered, and live on good terms with their neighbours. Beyond the villages of this tribe there was again a long gap destitute of inhabitants, and Mr. Chandless then met with Indians, near the sources of the main river, who had never had any intercourse, even indirectly, with civilised men; they were ignorant of the use of iron, using stone implements, specimens of which he exhibited to the meeting.

The Purus for nearly its whole length flows through an alluvial plain with occasional clay cliffs, similar to those observed throughout the line of the main Amazons. The Aquiry flows through what is called in Portuguese *terra firme*, but the country, like that of the Purus and Upper Amazons, is densely covered with forest. On the Aquiry Mr. Chandless picked up some fossil bones which, on being shown to Professor Agassiz, were pronounced by him to belong to the Mososaurus. The animals seen on the banks of the Aquiry were very tame. Capybaras were especially numerous, resembling flocks of sheep on the banks. On the sand-banks of the Purus the green ibis and the peacock-heron used to run along a few yards ahead of the canoe. In one place, Mr. Chandless witnessed the unusual sight of numerous flocks of curassow-birds settled on the ground, attracted by fruit growing near the edge of the water. The lower part of the Aquiry was inhabited by Hypurinás; higher up succeeded the Capechenes tribe, who have no canoes, but merely a few rafts of arrow-grass. The first 300 miles of the Aquiry Mr. Chandless found no difficulty

in navigating, even at the lowest stage of water. He considered it to be perfectly navigable for steamers up to the parallel of 11° s. At some future time it may become a valuable means of communication with the province of Caravaya in Southern Peru—the more so as thus far it comes straight as if from the Madre de Dios; still it was not of a size to give him much hope of its being that unapproachable river. After the parallel of 11° the Aquiry bends from the west and becomes wider and shallower, so that the party had to drag the canoes perpetually over the obstacles. At last canoe-travelling was completely stopped by a network of stranded timber, and Mr. Chandless had to leave behind most of his party with the larger canoe, and continue the journey in a small boat (*montaria*). He was here a little too early, for the dry season had not yet broken up and given depth to the upper course of the river. At length he found it useless longer to continue the laborious task, and turned to descend.

From a point a little above where the Aquiry bends from its easterly to a northerly course, lat. 11° s., Mr. Chandless started inland on foot, striking due south and hoping to reach some other river belonging to the Madre de Dios basin. For the first three or four miles inland the wood was tolerably clear, but beyond that distance almost impenetrable, except where the party cut a path. At the end of a week he was compelled to return for want of provisions. At four or five miles from the bank of the Aquiry he crossed a low ridge, and beyond this came to a succession of small streams, all with a general direction of east. Mr. Chandless concluded by expressing his opinion that the Madre de Dios falls into the Beni, perhaps between 11° and $11^{\circ} 30'$ s. lat.

The paper will be published entire, with the Author's map of the Aquiry, in the Journal, vol. xxxvi.

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2. *Journal of an Expedition to Explore the Courses of the Rivers San Gavan and Ayapata, in the Peruvian province of Caravaya.* By DON ANTONIO RAIMONDY, Honorary Corresponding Member of the Royal Geographical Society.

DON ANTONIO RAIMONDY, our Peruvian Honorary Corresponding Member, who is already well known to South American geographers as the author of a valuable work on the Amazonian province of Loreto, has now communicated to the Society a most interesting paper, containing the results of his exploration of the rivers San Gavan and Ayapata, in the Peruvian province of